

We claim:

1. A method for treating a proteinaceous product to decrease the degree of  
5 caking during storage or transport, comprising the steps of:
- (a) adding a reducing agent to the proteinaceous product in an amount between 0 ppm and up to about 10,000 ppm; and
  - (b) adding a chaotroph to the proteinaceous product in an amount between 0 ppm and up to about 40,000 ppm.

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2. A method as defined in claim 1, wherein the reducing agent is selected from the group comprising sodium bisulfite, disodium sulfite, sodium sulfide, dithiothreitol, beta-mercaptoethanol, and sulfur dioxide.

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3. A method as defined in claim 1, wherein the chaotroph is selected from the group comprising ammonia, urea, and guanidine hydrochloride.

4. A method as defined in claim 1, further comprising the step of adding an enzyme to the proteinaceous product in an amount up to about 1000 ppm.

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5. A method as defined in claim 5, wherein the enzyme replaces all or a part of the reducing agent.

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6. A method as defined in claim 4, wherein the enzyme is selected from the group comprising thioredoxin *h* (TRX *h*), thioredoxin reductase, protein disulfide reductase, keratinase, and papain.

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7. A method as defined in claim 1, further comprising the step of adding a material which assists in maintaining a reducing condition in the proteinaceous product in an amount up to about 10,000 ppm.

8. A method as defined in claim 7, wherein the material is selected from the group comprising TBHQ, BHA, BHT, propyl gallate, carnosic acid, and plant extracts.

9. A method as defined in claim 7, wherein the proteinaceous product is contained in a substantially airtight container and wherein the step of adding a material which assists in maintaining a reducing condition in the proteinaceous product comprises flushing  
5 the container with nitrogen, carbon dioxide or any other inert gas.

10. A method as defined in claim 1, further comprising the step of adding a material which assists in blocking of free sulfhydryl groups in an amount up to about 10,000 ppm.  
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11. A method as defined in claim 10, wherein the material which assists in blocking of free sulfhydryl groups is selected from the group comprising oxidized glutathione, ascorbic acid, sodium sulfite, and N-ethylmaleimide.

12. A composition for treating a proteinaceous product to decrease the degree of caking during storage or transport, comprising:  
15 (a) a reducing agent in an amount between 0 ppm and up to about 10,000 ppm of the proteinaceous product; and  
(b) a chaotroph in an amount between 0 ppm and up to about 40,000 ppm of the  
20 proteinaceous product.

13. A composition as defined in claim 12, wherein the reducing agent is selected from the group comprising sodium bisulfite, disodium sulfite, sodium sulfide, dithiothreitol, beta-mercaptoethanol, and sulfur dioxide.  
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14. A composition as defined in claim 12, wherein the chaotroph is selected from the group comprising ammonia, urea, and guanidine hydrochloride.

15. A composition as defined in claim 13, wherein the chaotroph is selected from  
30 the group comprising ammonia, urea, and guanidine hydrochloride.

16. A composition as defined in claim 12, further comprising an enzyme in an amount up to about 1000 ppm of the proteinaceous product.

17. A composition as defined in claim 16, wherein the enzyme replaces all or a part of the reducing agent.

18. A composition as defined in claim 16, wherein the enzyme is selected from the group comprising thioredoxin *h* (TRX *h*), thioredoxin reductase, protein disulfide reductase, keratinase, and papain.

19. A composition as defined in claim 12, further comprising a material which assists in maintaining a reducing condition in the proteinaceous product in an amount up to about 10,000 ppm of the proteinaceous product.

20. A method as defined in claim 19, wherein the material is selected from the group comprising TBHQ, BHA, BHT, propyl gallate, carnosic acid, and plant extracts.

21. A composition as defined in claim 19, wherein the proteinaceous product is contained in a substantially airtight container and the container is flushed with nitrogen, carbon dioxide or any other inert gas.

22. A composition as defined in claim 12, further comprising a material which assists in blocking of free sulfhydryl groups in an amount up to about 10,000 ppm of the proteinaceous product.

23. A method as defined in claim 22, wherein the material which assists in blocking of free sulfhydryl groups is selected from the group comprising oxidized glutathione, ascorbic acid, sodium sulfite, and N-ethylmaleimide.

24. A composition as defined in claim 12, wherein the reducing agent is included at between about 100 ppm and about 5000 ppm of the proteinaceous product; and wherein

the chaotroph is included at between about 100 ppm and about 10,000 ppm of the proteinaceous product.

25. A composition as defined in claim 16, wherein the enzyme is included at  
5 between about 10 ppm and about 500 ppm of the proteinaceous product.

26. A composition as defined in claim 19, wherein the material which assists in  
maintaining a reducing condition in the proteinaceous product is included at between about  
100 ppm and about 5,000 ppm of the proteinaceous product.  
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27. A composition as defined in claim 19, wherein the material which assists in  
blocking of free sulfhydryl groups in the proteinaceous product is included at between about  
100 ppm and about 5,000 ppm of the proteinaceous product.

15 28. A method for treating dried distiller's grains to decrease the degree of caking  
during storage or transport, comprising the steps of:

(a) adding to the dried distiller's grains between 0 ppm and about 5,000 ppm of a  
reducing agent selected from the group consisting of sodium bisulfite, disodium sulfite,  
sodium sulfide, dithiothreitol, and beta-mercaptoethanol to the proteinaceous product;

20 (b) adding to the dried distiller's grains between 0 ppm and about 10,000 ppm of  
a chaotroph selected from the group consisting of ammonia, urea, and guanidine  
hydrochloride;

(c) adding to the dried distiller's grains between about 0 ppm and about 500 ppm  
of an enzyme selected from the group consisting of thioredoxin *h* (TRX *h*), thioredoxin  
25 reductase, protein disulfide reductase, keratinase, and papain;

(d) adding to the dried distiller's grains between about 0 ppm and about 5,000  
ppm of a material which assists in maintaining a reducing condition in the proteinaceous  
product selected from the group consisting of TBHQ, BHA, BHT, propyl gallate, carnosic  
acid, plant extracts, or any inert gas that will exclude oxygen, preferably nitrogen or carbon  
30 dioxide; and

(e) adding to the dried distiller's grains between about 0 ppm and about 5,000 ppm of a material which assists in blocking of free sulfhydryl groups selected from the group consisting of oxidized glutathione, ascorbic acid, sodium sulfite, and N-ethylmaleimide.